



PATENT APPLICATION  
DOCKET NO. 33726-00016USPX

## REMARKS

Reconsideration and allowance are respectfully requested in view of the foregoing Amendments and the following remarks..

Claims 20 - 24 are pending in this application.

### Regarding the Specification

The present disclosure was objected to because of a couple informalities noted by the Examiner. Applicant has amended the specification by changing "um" to " $\mu\text{m}$ " throughout the specification to represent micrometers. Furthermore, the acronym STS is a well-known acronym for Surface Technology Systems, Inc. and Applicant has amended the specification to indicate such.

### Regarding the § 112 Rejection

Claims 20-24 were rejected under 35 U.S.C. § 112, first paragraph for failing to comply with the enablement requirement. The Office Action indicates that the specification as originally filed does not provide a description of the claimed apparatus. The Office Action goes on to say that the claimed etching tool and the opening enlarging tool have not been described in the specification. Applicant respectfully traverses this rejection.

Applicant respectfully points out that on page 14, starting at line 6, the originally filed application states that a multi-step process or a pulsed etch process can be performed depending on the type of etching tool used. The specification provides an example of an ICP RIE tool. Such a tool must have the capability of performing a cyclical etch process. On the same page, page 14, line 19, the present application states that an STS multiplex ICP etch system can be

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used. STS stands for Surface Technology Systems Ltd. (STS) which is a manufacture of an ICP RIE tool. There are other manufacturers of an ICP RIE tool, such as trion which manufactures a minolock II and an oracle system. Other manufactures manufacture a variety of different types of ICP RIE tools that can be used as the basis for the exemplary invention. Applicant further points out that these tools are modified to perform a multi-step process or a pulsed etch process wherein the tool is set up to run a two etch process alternatively. One of the etch processes is adapted to etch the resist layer and the other etch process is adapted to etch the trench in a wafer. As such, Applicant respectfully traverses the § 102, first paragraph rejection, because a suitable apparatus is provided in the specification in such a way as to enable one skilled in the art to which it pertains, or with which the invention is most nearly connected, to make and/or use the invention. Applicant respectfully requests that the § 112, first paragraph, rejection be withdrawn.

Claims 20-24 were also rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

With respect to claim 20, Applicant appreciates the Examiner's thorough examination of this claim and comments therefor. Applicant has amended claim 20 clarifying that it is an apparatus claim comprising "an etching tool adapted to perform a vertical etch" and "an opening enlarging tool adapted to enlarge said opening in said mask." The etching tool and the opening enlarging tool are "adapted to operate in an alternating manner in order to form a trench of a desired depth in said layer of material." Applicant respectfully submits that for examination purposes not any etch tool that is capable of running a two etch process alternatively will meet the claim limitations. Applicant submits that such a tool would have to be adapted to or

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programmed to perform the functions required by the claim. Applicant respectfully submits that claim 20, as amended, is definite and particularly points out and distinctly claims the subject matter which the Applicant regards as the invention. Applicant further submits that the amendments made to claim 20 are not intended to narrow the limit the scope of the claim but instead have been made to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. As such, Applicant respectfully submits that the amendments to claim 20 should not limit the doctrine of equivalence coverage of this claim. Applicant respectfully requests that this § 112, second paragraph, rejection be withdrawn and submits that claim 20 is ready for allowance.

With respect to claims 21, 22, 23, and 24, these claims depend upon claim 20 and have been amended to coincide with the wording changes of claim 20. Furthermore, with respect to claims 23 and 24, the limitation for “said resist etch process tool” has been amended to be a “opening enlarging tool”. With respect to claims 21-24, the amendments to these claims are not intended to narrow the scope or limit the equivalence of the claims, but instead have been made to overcome the § 112, second paragraph, rejection. Applicant respectfully submits that all claims 20-24 are definite and particular point out and distinctly claim the subject matter which the Applicant regards as the invention and respectfully requests that the § 112, second paragraph rejection be withdrawn.

Regarding the § 102 Rejection

Claims 20-22 and 24 were rejected under 35 U.S.C. § 102(b) as being anticipated by Nowak et al (U.S. Patent No. 5,865,896). Applicant respectfully traverses the rejection.

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Nowak is an invention that is related to a high density plasma chemical vapor deposition (CVD) reactor have inductive and capacitive coupling modes which can be selected individually or in combination for chamber cleaning operations. In a nutshell, Nowak is for an apparatus designed to perform chemical vapor deposition where deposition is required as a first step followed subsequently by an etching process for cleaning the chamber after unloading the wafer from the chamber. Nowak does not teach or anticipate an apparatus comprising an etching tool “adapted to perform a vertical etch on a layer of material and an opening enlarging tool adapted to enlarge said opening in said mask.” Furthermore, Nowak does not teach or anticipate an apparatus wherein the etching tool and the opening enlarging tool of the apparatus are “adapted to operate in an alternating manner in order to form a trench of a desired depth in said layer of material.”

Applicant submits that the Examiner has neglected to point out where the claimed opening enlarging tool is discussed in Nowak and where in Nowak it is discussed that it can run two etch processes, one being on a layer of material and another being only on an opening in the mask on the surface of the layer of material. As such, Applicant respectfully submits that Nowak does not teach or anticipate the presently claimed invention and respectfully requests that the § 102 rejection be withdrawn.

Furthermore, without admitting that any elements in claims 21, 22 and 24 are found in Nowak, Applicant states that these claims are dependent upon claim 20 which is allowable. Applicant respectfully submits that the § 102 rejection should be withdrawn and that claims 21, 22 and 24 are also ready for allowance.

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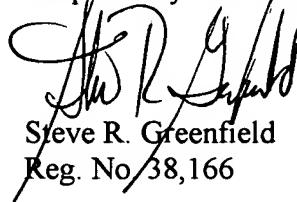
Regarding the § 103 Rejection

Claim 23 was rejected under 35 U.S.C. § 103(a) as being rendered obvious by Nowak et al in view of Koshimizu (U.S. Patent No. 5,935,373).

Claim 23 is dependent upon claim 1 which, as stated above, which is not taught or anticipated by Nowak. Applicant further submits that Nowak does not render claim 20 obvious for the same reasons as stated above with respect to claim 20. As such, Nowak does not obviate claim 23. Furthermore, Koshimizu like Nowak is designed to perform chemical vapor deposition (CVD) with a deposition is required as a first step followed subsequently by an etching process to clean the chamber after unloading the wafer from the chamber. Koshimizu may teach a CVD device that operates in a pulse manner, but does not teach, allude to or render obvious the inadequacies of Nowak with respect to rendering claim 23 obvious. As such, Applicant respectfully requests that the § 103 rejection be withdrawn and submits that the present claims are all allowable.

In view of the above, it is believed that Applicant has been fully responsive to the Restriction Requirement and this application is in condition for allowance, and such a Notice is respectfully requested.

Respectfully submitted,



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Dated: Oct 16, 2003

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